AV Testing Protocols and Public Safety Considerations Training Course

Professional Development Training Course Outline

Category	Traffic Management & Road Safety	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The rapid deployment of Autonomous Vehicles (AVs) has created a critical need for robust AV testing protocols, advanced safety validation frameworks, and standardized approaches to regulatory compliance. As cities evolve into smart mobility ecosystems, transportation agencies, policymakers, engineers, and operators must integrate cutting-edge validation tools, real-world simulation models, and risk-mitigation strategies to ensure public trust. AV Testing Protocols and Public Safety Considerations Training Course provides a comprehensive and timely overview of the latest AV safety assessments, scenario-based testing, sensor reliability evaluation, and human-machine interaction (HMI) safety considerations that define today's mobility landscape.

Public safety remains at the heart of autonomous technology adoption. Professionals must understand how to evaluate edge-case scenarios, perform failure mode analysis, enforce cyber-physical security safeguards, and uphold ISO 26262, UL 4600, and SAE standards. This intensive program equips industry stakeholders with the skills to design, implement, and audit AV testing environments, apply data-driven safety metrics, and manage community expectations while promoting responsible innovation.

Programme Curriculum

AV Testing Protocols and Public Safety Considerations Training Course

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Course Duration

5 days

Course Objectives

Participants will be able to:

1. Apply scenario-based AV testing frameworks aligned with global regulatory standards.
2. Evaluate sensor fusion reliability using advanced perception validation techniques.
3. Conduct failure mode & effects analysis (FMEA) for autonomous systems.
4. Implement simulation-driven safety testing using digital twins and synthetic datasets.
5. Assess cybersecurity risks in AV safety-critical systems.
6. Integrate ISO 26262 functional safety requirements into test planning.
7. Develop AV safety performance indicators (SPIs) and risk-scoring models.
8. Analyze LiDAR, radar, and camera performance under real-world stress conditions.
9. Apply operational design domain (ODD) mapping for safe deployment.
10. Evaluate HMI safety for autonomous passenger and commercial vehicles.
11. Compare global AV safety regulations, including SAE, EU, and NHTSA frameworks.
12. Conduct accident reconstruction and root-cause analysis in AV incidents.
13. Design public safety engagement strategies for AV testing environments.

Target Audience

1. AV engineers and test operators
2. Transportation safety regulators
3. Smart mobility program managers
4. Automotive OEM and Tier-1 engineers
5. Public safety and emergency response teams
6. City planners and transportation policymakers
7. Risk and compliance officers
8. Academic researchers in autonomous mobility

Course Modules

Module 1: Foundations of AV Safety & Testing Frameworks

- Evolution of AV technology and safety milestones
- Overview of safety frameworks (SAE, NHTSA, EU AV regulation)
- AV system architecture fundamentals
- Core safety metrics and testing benchmarks

- Understanding ODD boundaries
  Case Study: Waymo ODD expansion strategy and safety validation approach.

Module 2: Sensor Systems & Perception Validation

- LiDAR, radar, and camera calibration essentials
- Sensor fusion validation workflows
- Environmental stress testing
- Blind spot and occlusion scenario assessment
- Dataset labeling quality requirements
  Case Study: Tesla Autopilot perception challenges in low-light scenarios.

Module 3: Scenario-Based Testing & Digital Twin Simulation

- Synthetic scenario generation
- Digital twin integration for AV modeling
- Edge-case simulation and stress testing
- Closed-course vs. open-road scenario evaluation
- Simulation-to-reality correlation methods
  Case Study: NVIDIA DRIVE Sim use in scenario-based safety modeling.

Module 4: Functional Safety & System Failure Analysis

- ISO 26262 requirements and safety lifecycle
- Safety integrity levels (ASIL)
- Hardware and software safety validation
- Failure Mode & Effects Analysis (FMEA)
- Redundancy and fallback system design
  Case Study: Volvo’s redundancy strategy for L4 autonomous trucks.

Module 5: Cybersecurity & Cyber-Physical Safety Risks

- AV cybersecurity threat landscape
- Secure data pipelines and encryption
- Vulnerability assessment frameworks
- Over-the-air update risks and mitigations
- Incident response and forensics
  Case Study: Jeep Cherokee remote hacking and implications for AV safety.

Module 6: Human-Machine Interaction & Passenger Safety

- HMI design for autonomous controls
- User trust and behavior modeling
- In-vehicle alerting systems
- Pedestrian communication cues
- Accessibility considerations
  Case Study: Cruise AV pedestrian interaction experiments.

Module 7: AV Incident Response & Public Safety Coordination

- Emergency response procedures for AV crashes
- Fire, battery, and hazardous material protocols

- Coordination with police, EMS, and DOT
- AV crash reporting standards
- Community safety communication strategies

  Case Study: San Francisco first-responder protocols for robotaxi incidents.

Module 8: Deployment Readiness, Compliance & Safety Documentation

- Pre-deployment safety audits
- Safety case creation (UL 4600)
- Regulatory approval workflows
- Public road testing requirements
- Continuous monitoring and improvement systems

  Case Study: Zoox safety case documentation and approval pathway.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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